# Taenia Solium (neurocysticercosis)

Note: cysticerci deposited in the CNS may remain there for several years. When they begin to die, they also begin to swell🡪 causes clinical symptoms

Presentation:

1. 28 yr old hispanic man had severe headache and 2 generalized seizures
2. recent immigrant from Mexico, no previous history of seizures
3. showed 12% eosninophils in CBC differential
4. CT: intracranial calcified cyst (arrow)
   1. 
5. Diagnosis: Neurocysticercosis

DDX

1. Brain abscess
2. Craniopharyngioma
3. Cryptococcal meningoencephalitis
4. Medulloblastoma
5. Neurocysticercosis
6. Toxoplasmosis
7. Tuberculoma
8. Rationale: Intracerebral mass lesions have many possible causes (common ones are listed above). Homogeneous masses may be malignancies, and ring enhancement is classically associated with brain abscess. Cystic masses may be malignant, but they are also classically associated with neurocysticercosis. Other infectious causes of intracerebral masses include toxoplasmosis, tuberculoma, and cryptococcosis.

Taenia Solium

1. adult pork tape worm has an attachment organ, **scolex,** with suckers or grooves.
   1.  Scolex of Taenia solium. Note four suckers, and two rows of hooks.
2. The scolex (neck region) is connected to long chain of segments = Proglottids.
3. Mature worms are hermaphroditic.
4. Gravid worms have eggs in a uterus.

Epidemiology

1. Cysticercosis occurs worldwide, particularly in poorer nations in rural areas due to sanitary conditions allowing pigs to have access to human feces.
2. highest prevalence in parts of Africa, Latin America, SE Asia, Eastern Europe
3. Pigs are the intermediate host
4. ingestion of uncooked or undercooked meat with T. Solium larvae may cause development of human disease (various forms – subcutaneous, ocular, CNS)

Pathogenesis:

1. Cysticercus from meat develops in the human intestine into adult tapeworm🡪 attaches to small intestine via scolex (remains alive in the small intestine for many years)
2. Adults produce proglottids, which mature, become gravid, detach from the tapeworm, and migrate to the anus or are passed in stool. Eggs also pass with feces and can survive in environment for days / months.
3. ingested eggs hatch in the intestine🡪 embryo penetrates mucosa and is carried via circulation to site of development (brain) where embryo grows into cysticercus which has a single scolex and is deposited in cerebral parenchyma.
4. Mass effect of larval cyst on the brain causes seizures
5. can see scolex on an MRI scan🡪 confirm with IgG titer
6. Serologic evaluation of IgG specific for T. solium usually confirms the clinical diagnosis of cysticercosis.
7. The CDC immunoblot assay is based on detection of IgG antibody (in serum or CSF) to purified structural glycoprotein antigens from the larval cysts of T. solium.
8. Unless large numbers of cysts are present, the body’s immune system does not act to destroy the T. solium organisms, and cysts can live for many years undetected. Cysticerci may also be found in subQ tissues and eye. The organisms cause stationary subQ masses, which must be distinguished from lipomas. Ocular cysticercosis may occur when aqueous or vitreous humor interferes with vision. Neurologic symptoms may also arise when the encysted worm dies and the host mounts an inflammatory response. Intraventricular cysts cause hydrocephalus.

Treatment:

1. asymptomatic cysts and controllable seizures don’t require treatment
2. hydrocephalus from intracranial hypertension may require shunting
3. Praziquantel or Albendazole may be used. Cortiosteroids can reduce brain swelling / edema.

Prevention

1. avoid undercooked beef / pork. Improve sanitation.
2. Proper inspection of meat